Manufacturing The Future of Communications℠

InterDigital℠

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February 4, 1993

Ms. Donna R. Searcy
Federal Communications Commission
1919 M Street, N.W. - Room 222
Washington, D.C. 20554

Re: Comments of InterDigital Communications Corporation
in RM No. 8159.

Dear Madam Secretary:

Transmitted herewith are an original and nine copies of InterDigital's comments in the above referenced proceeding.

If you have any questions with regard to this matter, please do not hesitate to contact me.

Sincerely,

INTERDIGITAL COMMUNICATIONS CORPORATION

David L. Smith
Vice President

Enclosure
DLS: sps

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of		
Petition to Authorize Co-Primary Sharing of the 450 MHz Air-Ground Radiotelephone Service with BETRS	)	RM-8159

COMMENTS OF INTERDIGITAL COMMUNICATIONS CORP.

I. INTRODUCTION

InterDigital Communications Corporation ("InterDigital")[1] respectfully submits these comments in the above captioned proceeding. InterDigital is a wireless technology manufacturer that has developed an advanced spectrum efficient digital radio system which operates under the current BETRS rules to provide wireless loops between telephone central offices and customer premises. InterDigital's advanced digital radio system called the Ultraphone, is based on digital Time Division Multiple Access (TDMA) techniques which allow multiple users to simultaneously share a single radio channel.

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[1] On October 15, 1992, International Mobile Machines Corp. (IMM) acquired SCS Mobilecom/Telecom, Inc., a world leader in Code Division Multiple Access (CDMA) technology. SCS was one of the early pioneers in testing and proving the merit of Broadband CDMA (B-CDMA) technology in the PCS microcell environment. The merger of the two companies and their technology staffs has resulted in the formation of a new company: InterDigital Communications Corporation

II DISCUSSION

In this proceeding, the petitioners request the FCC permit BETRS to share the air-to-ground (ATG) channels, which are directly adjacent to the 26 channels in the 450 MHz band which BETRS shares with the Public Land Mobile services.

InterDigital is the leading supplier of BETRS equipment to the telephone industry and has over six and a half years of direct experience in the engineering and installation of BETRS systems. The first BETRS system in the U.S. was installed in rural Wyoming in the Fall of 1986. Since then hundreds of systems have been installed throughout the U.S. providing thousands of rural telephone lines to telephone company customers. Without access to BETRS technology, many of these customers would have been denied access to the telephone network. BETRS spectrum shortages in certain rural areas are currently denying future customers and the telephone industry the cost and quality advantages of radio-based access to the telephone network.

A. THE CURRENT 450 MHZ ALLOCATION IS INCAPABLE OF SUPPORTING CURRENT AND FUTURE BETRS REQUIREMENTS

As pointed out by the petitioners, the lack of spectrum for BETRS not only curtails future installations but also seriously effects existing systems. In addition to the BETRS systems that have never been built because of lack of available spectrum, there are dozens of examples of existing BETRS systems that are unable to expand to offer basic telephone service to additional customers because of the lack of frequencies. Moreover, there are many locations where BETRS systems are not even taken to the

planning stage because there is no clear path to future spectrum.

Lacking BETRS spectrum, many telephone companies are forced to install more expensive physical outside plant to upgrade antiquated copper lines or in the case of new installations, require a large up front line extension contribution from the customer. In the initial BETRS installation in Wyoming, if copper plant was used, the new customers would have had to contribute over $40,000 each to the installation. End user contributions to construction do not cover the total cost of the outside plant installations. The remainder is absorbed by the telephone company and added to to the overall averaged cost of basic telephone service. In the future as telephone companies move increasingly towards incentive based regulation, cost avoidance and emphasis on quality basic service in rural areas will become even more critical.

Because of the dearth of channels available, BETRS access to the telephone network at affordable cost is in jeopardy. This occurs at the same time that declining costs in high quality digital radio have opened up a whole new level of rural telephone subscribers. The attached article details a new "wireless city" in rural Texas that has converted from poor quality copper-based outside plant to digital-radio based BETRS. The decline in available frequencies in the 450 MHz band calls into question whether digital radio can be used in similar situations in the future. BETRS installations throughout rural America are being placed on hold awaiting spectrum relief for this valuable service.

B. COMMISSION ACTION TO ALLOW ONE-WAY PAGERS TO ACCESS TWO-WAY BETRS FREQUENCY EXACERBATES THE BETRS SPECTRUM SHORTAGE

The decreasing availability of 450 MHz channels for BETRS is the result of two factors: increased BETRS installations and increased licensing of one-way pagers on these valuable two-way frequencies.

In CC Docket 87-120,[2] the FCC allowed paging companies access to these two-way paging channels over the strenuous objections of the supporters of the BETRS petition (which was under consideration by the Commission in the same time period). IMM (InterDigital) suggested at that time that "...[T]he Commission should strive to accommodate the demand for one-way services without causing a de facto reallocation of two-way frequencies [450 MHz] that are critical to the operation of basic telephone service in non-urban areas."[3]

We also stated in the reply cycle that "...IMM (InterDigital) urges the Commission to restrict the flexibility to unpair to the two-way 150 MHz frequencies in the top 30 MSAs where a licensee can demonstrate an actual need for additional paging frequencies."[4]

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[2] Flexible allocation of frequencies in the Domestic Land Mobile Services for paging and other services., 52 Fed Reg. 19741 (May 27, 1987).

[3] Comments of IMM Corp. at 19.

[4] Reply comments of IMM Corp. at 10.

The Commission, however, acted in that proceeding to open up the 450 MHz two-way channels to unrestricted one-way use by paging companies. The licensing of paging systems, in rural areas, on the primary BETRS spectrum is a factor in the current shortage of spectrum for BETRS. The licensing of these systems cuts two-ways: (1) it reduces the availability of 450 MHz channels for BETRS; (2) it requires increased separation from existing and planned BETRS systems to avoid co-channel interference because of the higher power used by rural paging systems

Given the large number of paging channels available to the paging industry, unrestricted paging use of BETRS frequencies in rural locations is unsupported by any rational public interest standard. Accordingly, a moratorium on licensing additional paging systems in rural areas (especially where exclusive paging channels are available) would appear to be prudent and it would improve a deteriorating situation.

The Commission action to allow paging interests access to BETRS spectrum is understandable in the context of the primary focus of the Mobile Service Division (MSD) which regulated BETRS. BETRS rules which govern radio-based fixed telephone service are the responsibility of the office which has primary regulatory oversight of the mobile communications industry.

For example, in a current proceeding to re-write Part 22 rules (Public Mobile Service), BETRS was virtually ignored. Many proposals in the re-write which are logical for the mobile

licensee make no sense, and in fact are harmful to fixed BETRS licensee. For instance, proposals by the MSD to limit initial channel availability for mobile licensees would effectively eliminate BETRS as an option for telephone company provision of telephone service. The action proposed would force a grade of service on BETRS that although acceptable for mobile service is unacceptable for basic telephone service. In fact state utility commissions which regulate basic telephone quality of service would not allow a mobile grade of service for basic telephone service. Other proposals governing antenna polarization, and number of transmitters reflect a similar lack of understanding or indifference to the unique needs of BETRS as a basic telephone service.

One simple solution to the problem would be to establish a new subpart within the Public Mobile Service rules for BETRS. Another would be to move responsibility for BETRS to the Domestic Facilities Division and place the BETRS rules in Part 21 (Domestic Public Fixed Radio Services). In any event, BETRS has matured to the point that it should no longer be a step-child (and a poor one at that) of the Public Mobile Services.

III **CONCLUSION**

The Commission must take action to insure that no rules are promulgated within the major re-write of Part 22 that have an unintended adverse effect on BETRS.

Further, the Commission should take a hard look at the availability of paging spectrum in rural areas and evaluate the need to continue to allow paging interests to access BETRS spectrum in rural areas.

Finally, the petitioners have made a compelling case for additional BETRS spectrum. The location of the additional shared spectrum will allow the existing equipment to access these new channels easily. Moreover, the separation criteria will ensure an interference-free sharing arrangement. There are no downsides to this proposal and we ask the Commission to act promptly to provide this recommended spectrum relief to this important service.

Respectfully submitted,

David L. Smith
Vice President

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February 4, 1993

Victoria Advocate

December 18, 1992

West Texas town's phones now digital

QUITAQUE (AP) – Crackling static and delayed dial tones used to plague telephone callers in this West Texas town.

Phone company officials hated having to lay and maintain miles of copper lines to serve isolated customers across the rugged terrain.

But a new system of digital phone service seems to be pleasing everybody.

GTE spent two years developing and installing the replacement to the traditional phone poles and wires that cross these scruffy hills and sheer drops below the caprock. The switchover Dec. 2 went smoothly, company officials said.

"We're proud to see the overhead wires go by the wayside," said Quitaque banker O.R. Stark. "They've been nothing but problems."

Radio waves are carrying callers' voices in technology that officials say makes Quitaque the world's first city with entirely digital phone service.

"It's the first wireless shot heard 'round the world," said Dave Smith, vice president for corporate communications for Pennsylvania-based InterDigital Communications Corp., which developed the technology.

Bob Wolter, InterDigital's vice president for sales, explained the system like this: A town resident picks up his receiver to make a call. A signal shoots through a short underground cable to a cluster box shared by 24 customers.

The signal passes through the cluster up a nearby pole, where an antenna points to a radio transmission tower in Turkey, 10 miles east. The tower then signals equipment 30 miles northeast in Lakeview to trigger a dial tone that buzzes back the same route.

That process takes 40 milliseconds, Wolter said.

Outside town, the process works the same way, except each rural customer has his own pole and antenna.

Buddy Langley, chairman of InterDigital subsidiary Universal Service Telephone Corp. in Irving, said the signals are sent through radio frequencies the Federal Communications Commission assigned.

CERTIFICATE OF SERVICE

I hereby certify that copies of the comments of InterDigital Communications Corporation in RM No. 8159 were mailed first-class, postage prepaid, to the parties noted below on the 5th day of February 1993.

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Date: February 5, 1993